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ABSTRACT

El Salvador has a new higher education law that established minimum requirements for educational quality. Analyzing data from El Salvador's 39 private universities made available by the country's Ministry of Education, this study assesses educational quality among these universities, especially addressing the effect of the size of the university on the quality of education. Eight indicators of quality were assessed. The data were collected with a survey designed and administered by the Ministry of Education. Principal component factor analysis was used to identify clusters of highly correlated indicators, and comparison of means was used to determine quality differences by size. Small institutions had higher rankings--lower ratios--in the following indicators of quality: overall student to faculty ratio, full-time student to full-time faculty ratio, students to computer ratio, and students to computers connected to the Internet ratio. Large institutions had higher rankings in these areas of quality: library holdings, percentage of full-time faculty, percentage of faculty with 5 more years teaching experience, and percentage of faculty with graduate degrees. Middle sized institutions were in the middle on all indicators of educational quality. Overall, there was considerable variation among all the universities assessed, indicating a wide variation of education quality among universities within their size group. Principal component factor analysis identified three clusters of variables linked to quality: time, interaction, and faculty. Implications for policy and administrative practice are discussed. (Contains 4 tables and 20 references.) (Author/SLD)

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Comparison of Indicators of Educational Quality among Institutions of Higher Education in El Salvador

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Abstract

El Salvador has a new higher education law that establishes minimum requirements for educational quality. Analyzing data from El Salvador's 39 private universities made available by the country's Ministry of Education, this study assesses educational quality among these universities, specifically addressing the effect of the size of the university on the quality of education. Eight indicators of quality were assessed. The data were collected with a survey designed and administered by the Ministry of Education. Principal component factor analysis was used to identify clusters of highly correlated indicators and comparison of means was used to determine quality differences by size. Small institutions had higher rankings—lower ratios—in the following indicators of quality: overall student to faculty ratio, full-time student to full-time faculty ratio, students to computer ratio, and students to computers connected to Internet ratio. Large institutions had higher rankings in the following indicators of quality: library holdings, percentage of full-time faculty, percentage of faculty with five or more years teaching experience, and percentage of faculty with graduate degrees. Middle size institutions were in the middle on all indicators of educational quality. Overall, there was considerable variation among all the universities assessed, indicating wide variation of educational quality among universities within their size group. Principal component factor analysis identified three clusters of variables linked to quality: time, interaction, and faculty. Implications for policy and administrative practice are discussed.

Comparison of Indicators of Educational Quality Among Institutions of Different Size in the Salvadoran Higher Educational System

The decade of the 1980s was tumultuous for El Salvador, marked by a very bloody and costly civil war. It was also a decade that saw the suspension of activities at the National University, a direct consequence of the aforementioned war, and an unprecedented proliferation of private universities, increasing from a total of five in 1980 to more than 40 by the middle of 1990 (Samayoa, 1994). That the precise number of private universities in El Salvador by mid-1990 is unknown (this study is based on information on the 39 private universities registered with the Ministry of Education) points out an obvious concern—quality. Many, indeed most of these new private universities lacked even the minimal resources to establish and maintain academic quality. Most of these institutions were deserving of the scorn heaped on them by the authorities of the National University and other recognized educators, referring to them as "universidades del garage." The issue of educational quality among the country's institutions of higher education has thus become the focus of considerable controversy and debate.

El Salvador is Latin America's second smallest country, larger only than Haiti (geographically it is approximately half the size of Kentucky). The country does not need and cannot support all these private universities. Some, indeed most, will and should fail, hopefully leaving the country with a limited number of quality private institutions of higher education both to cooperate and compete with the National University, as appropriate.

The issue then is obvious. Which of the new universities should survive and which should fail? What criteria should be used in making this decision and, just as important, who should be making this decision? Policies governing the quality of El Salvador's universities are needed as is decision-making authority regarding the future of questionable institutions of higher education (Cuellar, 1997).

In September 1996, El Salvador enacted a higher education law (*La Ley de Educación Superior)* that stipulated the policies and procedures under which all the country's universities would be required to operate. These policies and procedures were intended to guarantee, at the very least, minimal levels of quality among the country's universities. This was the first national law that recognized the need for quality assurance in higher education, establishing minimal standards that all of the country's institutions of higher education must meet. Despite the attention the new law has brought to the issue of quality among the country's universities, and despite non-governmental efforts to develop and implement accreditation standards among some universities, few studies have focused on the issue of educational quality. The research reported herein purports to do just this; it is an initial attempt to assess educational quality among El Salvador's universities.

The need to assess the quality of universities in general and their programs in particular are not the issue. Even in El Salvador, where many if not most of the new private universities struggle merely to survive from year to year, the debate is not on the need to assess and monitor quality. Rather, the debate is on, among other issues, how quality is to be measured, i.e., the indicators of quality. Few would argue with Harvey,

Green, & Burrows that quality among institutions of higher education is elusive and largely relativistic (1994).

In order to pin down, or "operationalize" the concept of quality, Kuh (1981) argues that assessment of quality must depend on appropriate indicators. That is to say, he argues that if certain conditions (indicators) are present, then quality would be manifest. Conversely, an absence of these conditions would imply lower quality. If Kuh's premise is accepted, the challenge then is to identify indicators of quality appropriate to El Salvador's universities, and then to assess their quality using these indicators. If the selected indicators of quality can be measured in a reliable fashion, and if they are indeed valid indicators of educational quality, then comparisons within and across institutions and over time may be made.

The eight indicators of quality described below attempt to do just this. We have selected these indicators for several reasons. First, they are traditional indicators of educational quality. As such, comparisons can be drawn between our findings and others. Second, among the possible indicators available, those we chose appear to be the most valid and reliable indicators of educational quality among El Salvador's universities. And finally, data were available from the country's Ministry of Education to measure these indicators. With regard to this latter point, it is to the Ministry's credit that data on the country's universities are now being collected in a systematic and rigorous fashion toward the goal of assessing higher education quality. While it cannot be denied that much needs to be done in this regard, what has been done is certainly creditworthy. And of those data collected by the Ministry and made available to us, we feel we have selected the most valid and reliable measures.

The identification of appropriate indicators of quality to assess institutions of higher education worldwide has emerged as an international issue (Kells, 1992). Indeed, identification of appropriate quality indicators across national boundaries is the principal challenge for cross-cultural research on higher education that attempts to draw comparisons focusing on educational quality, effectiveness, and efficiency. Using such indicators of quality allows for qualitative assessments of institutions of higher education within countries or between countries; at a particular point in time or over time; by type and size; or by goals and objectives (Gaither et al., 1995).

Spee and Bormans (1992) conceptualize an indicator as a quantifiable measure of the resources invested—inputs—and the return on those investments—achievements—in areas relevant to the objectives of the enterprise. Indicators thus differ from statistics in that indicators are signals of the presence of a quality construct rather absolute measures of that construct. Indicators thus acquire their significance in that they render observable and measurable the theoretical aspects of quality, a process known as "operationalization."

Accreditation of educational institutions in the United States is well established. At the very least, educational institutions at all levels (schools, college, universities) make every effort to gain regional—institutional—accreditation, knowing that without it, the institution's ability to survive is called into question. The need to gain and maintain accreditation is a powerful incentive for all educational institutions to invest in quality and the accreditation process itself can be a very powerful tool for assessing quality. Institutional accreditation in the United States usually takes the form of a lengthy and cyclical appraisal process—a cycle is usually ten years—by one of six regional

accrediting associations (Jordan 1989). The six regional accrediting associations in the U.S. are financed by the very same institutions that they accredit; their governing boards are made up of representatives from those institutions. Institutional accreditation should not be confused with professional accreditation. The latter is much narrower, assessing quality for the purpose of accrediting particular programs, departments, or schools within the institution of higher education. As a rule, professional accreditation is the responsibility of the professional associations representing the profession.

At the present time, El Salvador's Ministry of Education is concerned with issues of institutional quality, leaving program-specific quality concerns to professional associations, employers, and the like. Therefore, the Ministry has supported efforts to establish and implement guidelines for institutional accreditation. The guidelines developed by the Ministry are consistent with those established by the regional accrediting associations in the U.S., specifically the New England Association of Colleges and Schools. The process includes an extensive self-study; a follow-up assessment visit to the institution by a team well-trained "peers" from sister institutions; an accreditation report by this team, including recommendations; and a response by the institution under review.

According to Thrash (1979), institutional accreditation is the outcome of an evaluation process that assesses institutional quality by assessing the degree to which the institution in question fulfills its mission or achieves its stated goals. The criteria--or indicators--used to assess quality are developed by the membership of the accrediting association; the data are supplied by the institution under review. The goal of institutional accreditation is the assurance of educational quality based on an objective and thorough

assessment. However, institutional accrediting associations, in addition to their quality-assessment function, encourage and promote institutional improvement by requiring continuous self-study and evaluation by its members; by providing counsel and assistance to member institutions falling short of their goals; and by protecting their members against threats to their educational effectiveness or academic freedom.

The link between institutional accreditation and institutional quality establishes the credibility of the accreditation association in question. Without that link, the accreditation association is destined to failure. Casey and Harris (1979) make this point by arguing that the accreditation process is essential to quality assurance. At the most basic level, they argue, accreditation ensures that an institution has established conditions under which the achievement of educational quality can reasonably be expected. Educational quality is evaluated and encouraged by looking at the conditions that are believed to be necessary and desirable to assure such quality (Young, 1979).

Interest in quantifiable and comparative data has brought forth a variety of criteria to be considered in the review of existing programs and institutions (Barak & Berdahl, 1978). In fact, different criteria have been used in the evaluation of educational quality among universities. For example, most universities use, among others, the student-faculty ratio (see, for example, Colorado, 1994; Pennsylvania, 1993; and, Utah, 1993).

El Salvador's Ministry of Education required a large number of indicators of educational quality from the country's institutions of higher education. For this study, we've selected the following eight indicators: (1) student to faculty ratio, defined as the total number of students divided by the total number of faculty; (2) books to student ratio, defined as the total number of books available at the library divided by the total number

of students; (3) students to computers ratio, defined as the total of number students divided by the total number of computers; (4) percentage of full-time faculty, defined as the ratio of full-time faculty to total faculty; (5) percentage of faculty with five or more years of work experience at the institution; (6) students to computers connected to the Internet ratio, defined as the total number of students divided by the total number of computers connected to the Internet; (7) percentage of faculty who have studied at the graduate level; (8) full-time students to full-time faculty ratio, defined as the total number of full-time students divided by the total number of full-time faculty.

In this study, the grouping variable will be the institutional size in terms of number of students, a classification already established by the Ministry of Education. Large-size institutions have more than 6,000 students; medium-size institutions have between 1,501 and 6,000 students; and small size-institutions have fewer than 1,501 students.

This paper will address three research questions which arise from the literature and the particular context of the educational system of higher education in El Salvador: (1) What is the difference among large, medium, and small institutions of higher education as measured by the eight aforementioned educational quality indicators? (2) What is the relationship among these educational quality indicators? (3) What underlying factors, if any, could explain the patterns of relationship within the set of indicators of educational quality?

Method

Participants

The study consists of the entire population of public and private institutions of higher education in El Salvador, a total of 39, that participated in the evaluation and accreditation procedures established by the Ministry of Education. These 39 institutions provided the Ministry with the requested information related to the aforementioned eight quality indicators. Since the Ministry of Education grouped institutions based on size, the same classification will be used in this study: there were 24 large-size institutions, 10 medium-size institutions, and five small-size institutions.

Instrumentation

After the law was enacted, institutional self-studies and evaluations by peer evaluators from within the academic community were initiated in El Salvador. The Ministry of Education designed an instrument for data collection that was based on the aforementioned guidelines and procedures of the New England Association of Colleges and Schools. This instrument was then sent to all the institutions of higher education known to be operating by the Ministry in 1998.

Basic demographic information about the educational institutions was solicited by the survey. In addition, different content areas were addressed in the survey, including indicators of academic quality, indicators of infrastructure, and indicators of costs. In this study, the primary focus is only on the eight indicators of academic quality.

This study is based on secondary analysis of survey data. Consequently, we have no evidence of specific procedures that might have been followed to ensure adequate validity. As mentioned previously, however, the instrument was developed by the

Ministry of Education, following the general guidelines used by the New England Association of Colleges and Schools. In addition, experts in Latin American higher education reviewed the instrument to assess its face validity. Moreover, we compared the Ministry's instrument with other evaluation surveys used in other Central American countries, i.e. Nicaragua, Costa Rica. Based on these reviews and comparisons, we concluded the instrument has, at the very least, adequate validity.

Regarding the reliability of the instrument, the reader should be reminded that the data collected by the Ministry and reported herein were compiled as a part of the first phase for national accreditation, the self-study phase. The second phase of the accreditation process involved a visiting team to each of the universities for the purpose of corroborating each institution's self-study. In other words, the second phase of the accreditation process served as an indicator of the reliability of the information collected. Universities would be reluctant to submit other than valid and reliable data, knowing that its veracity were to be confirmed by a visiting accreditation team.

Design and Procedures

The research design in this study is descriptive and quantitative and is based on a secondary analysis of data provided by El Salvador's Ministry of Education. In 1997, the Ministry of Education sent the survey instrument to all of El Salvador's universities (all those known to be in operation by the Ministry at the time). The completed surveys were all returned by the higher education institutions within the timeframe established by the Ministry. The 100% response rate and timely submission of the requested information is really no surprise in light of the cooperating institutions dependence on Ministry of Education recognition and accreditation authority.

For the first time ever, basic information related to El Salvador's universities was made available to the general public. Meaningful data related to the performance of the country's universities were available to potential students, employers, and other stake holders based on the premise that market forces could and should play an important role in the welfare of these universities. In effect, the data used in this study and made available to us are available to one and all; these data are part of the country's public domain.

The statistical procedures used below include a comparison of means and percentages. As mentioned earlier, the comparison variable in this study will be the size of higher educational institutions in El Salvador according to the number of students on their campuses. Also, factor analysis is used in order to identify the underlying factors that explain the pattern of correlation within the set of quality indicators.

Findings

First research question: What is the difference among large, medium, and small institutions of higher education on the eight educational quality indicators?

Table 1 shows the mean score on the eight indicators of educational quality across institutions of different size. On students to faculty ratio, small institutions have the lowest ratio (10.56/1). On books to student ratio, large institutions have the highest number of books available per student (6). On students to computer ratio, small institutions have the lowest ratio (22.69/1), meaning that more computers are available to students. On percentage of full-time faculty, large institutions have the highest percentage (44.22). On percentage of faculty with five or more years teaching experience, large institutions have the highest percentage (36.59). On students to computers connected to

the Internet, small institutions have the lowest ratio (115.49/1), meaning that more computers connected to the Internet are available to students at these institutions. On full-time students to full-time faculty ratio, small institutions have the lowest ratio (24.38/1). Finally, on percentage of faculty with graduate degrees, large institutions have the highest percentage (17.71).

According to the data, small institutions are ranked in first place in four of the eight educational quality indicators set by the Ministry of Education, namely students to faculty ratio, students to computer ratio, students to computer connected to Internet ratio and full-time students per full-time faculty ratio. Also, according to the data, large institutions are ranked first place in the other four educational quality indicators set by the Ministry of Education, namely books to student ratio, percentage of full-time faculty, percentage of faculty with five or more years teaching experience, and percentage of faculty with graduate degrees.

Regarding measures of variability, standard deviations were computed on the eight educational quality indicators for each of the three groups of universities. Overall, there was considerable variability around these means as is shown in table 1. The unique exception of a standard deviation below three was the books to student ratio in medium-size institutions. The high standard deviations indicate that it is difficult to generalize due to the widely varied experiences in each group of institutions of higher education.

Table 1

Comparison of Indicators of Educational Quality Across Institutions of Different Size

	Small			Medium			Large		
Indicators of Quality	M	SD	N	M	SD	N	M	SD	N
Student-faculty ratio	10.56	5.32	24	14.84	6.87	10	24.84	8.89	5
Books-student ratio	4.89	3.94	24	2.94	2.08	10	6.26	8.40	5
Students-computer ratio	22.69	28.36	24	103.39	101.7	10	2051	4220	5
Percentage of full-time faculty	19.11	15.36	24	23.19	26	10	44.22	34.81	5
Percentage of faculty with five or more years teaching experience	20.15	18.18	24	24.34	16.41	10	36.59	18.42	5
Students-computers connected to internet ratio	115.49	266	24	750.2	1416	10	1486	2837	5
Full-time students to full-time faculty ratio	24.38	17.74	24	56.22	50.95	10	58.35	14.67	5
Percentage of faculty with graduate degree	13.98	17.19	24	16.67	18.93	10	17.71	7.03	5

Second research question: Is there a correlation among the different educational quality indicators set by the Ministry of Education?

Correlational analysis is concerned with determining the direction and strength of relationships among variables. In effect, the purpose of its use herein is to explore the extent to which the indicators of educational quality are or are not related. Toward this end, the Pearson product-moment correlation coefficient was utilized to analyze the data. Table 2 shows the results of the correlation analysis among the different indicators of educational quality set by the Ministry of Education across institutions of different size.

The correlation matrix shows four positive correlations significant at the .01 level (two-tailed) and one additional correlation significant at the .05 level (two-tailed). Those correlations significant at the .01 are the following: students to faculty ratio with students to computer connected to Internet ratio ($r = .529$); full-time faculty with faculty with five or more years teaching experience ($r = .572$); full-time student to full-time faculty ratio with full-time faculty ($r = .572$); and percentage of graduate faculty with full-time student to full-time faculty ratio ($r = .490$). The correlation that is significant at the .05 level is full-time student to full-time faculty ratio with students-computers connected to Internet ratio ($r = .318$).

Ary, Jacobs, and Razavieh (1996) have a classification for describing the magnitude of the relationship between variables. Following their classification, the four significant correlations at the .01 level would be considered moderate while the significant correlation at the .05 level would be considered low.

Table 2

Correlation Matrix of Indicators of Educational Quality

	st-fac	book-st	st-comp	f-tfac	5-year	st-compint	f-tstud/f-tfac	gradfac
st-fac	1.00							
book-st	-.115	1.00						
st-comp	.116	-.133	1.00					
f-tfac	-.064	.013	.272	1.00				
5-year	.088	-.245	.069	.572**	1.00			
st-compint	.529**	-.270	-.037	-.107	-.054	1.00		
f-tstud/f-tfac	.182	-.135	.058	.572**	.251	.318*	1.00	
gradfac	-.177	.099	-.073	.254	.104	.087	.490**	1.00

** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)

Note: st-fac = student to faculty ratio; book-st = books to student ratio; st-comp = students to computer ratio; f-tfac = percentage of full-time faculty; 5-year = percentage of faculty with five or more years of teaching experience; st-compint = students to computers connected to Internet ratio; f-tstud/f-tfac = full-time students to full-time faculty ratio; and, gradfac = percentage of faculty with graduate degrees.

Third research question: Is it possible to identify underlying factors that explain the patterns of correlation within the set of indicators of educational quality?

Principal component factor analysis, rotated using varimax, was used to identify clusters of highly correlated variables. Principal component analysis was chosen so as to include all the indicators of educational quality in all factorial equations, regardless of whether or not they were related to each other. Table 3 shows that the factor analysis identified three clusters of variables potentially linked to educational quality. Factor 1 consisted of two variables: full time student to full time faculty ratio and percentage of faculty with graduate degrees. Factor 2 consisted of three variables: student to faculty ratio, books to student ratio, and students to computers connected to the Internet ratio. Factor 3 also consisted of three variables: students to computers ratio, percentage of full time faculty, and percentage of faculty with five or more years of teaching experience.

Table 3

Rotated Factor Matrix

Indicator	Factor 1	Factor 2	Factor 3
St-fac	-5.997E-02	[.804]	6.292E-02
Book-st	.148	[-.482]	-.387
St-comp	-.208	8.176E-02	[.604]
f-tfac	.530	-.164	[.719]
5-year	.240	8.559E-03	[.735]
st-compint	.228	[.860]	-.180
f-tstud/f-tfac	[.805]	.294	.269
gradfac	[.838]	-.125	-.116

Extraction Method: Principal Component Analysis
Rotation Method: Varimax with Kaiser Normalization

Table 4 shows the total variance explained. The first component (Factor 1), accounting for 22.6 percent of the total variance of the factor matrix, was dominated by variables related to time, namely time at the university of both students and faculty, and time spent by faculty in graduate studies. This component could be labeled "time."

The second component (Factor 2), explaining 21.9 percent of the total variance, was dominated by variables related to interaction, such as students to faculty ratio and students to computers connected to Internet ratio. Applying Steven's critical values for

testing the significance of a loading (1996), books to students ratio was not included because its loading is below the critical value (< .700). Thus, this second component could be labeled "interaction."

Next, the third component, explaining 21.1 percent of the variance, appeared to be dominated by variables such as percentage of faculty with five or more years and percentage of full-time faculty. Following Stevens (1996), students to computers ratio should not be included because its loading is below the critical value (< .700). Thus, this third component could be labeled "faculty." All three components accounted for 66 percent of the variance in the factor matrix. The other five clusters were rejected because their Eigenvalues were less than one.

Table 4

Total Variance Explained

	Eigenvalue	Percent Variance	Cumulative Variance
Factor 1	1.810	22.623	22.623
Factor 2	1.754	21.919	44.542
Factor 3	1.694	21.179	65.722

Extraction Method: Principal Component Analysis.

Discussion

The topic of educational quality is an essential matter for the Salvadoran system of higher education. The Ministry of Education has established a framework that will contribute to quality achievement in higher education. As is illustrated in the literature review section of this study, accreditation has the potential of promoting and assuring quality. In the United States, accreditation at the very least promotes educational quality by evaluating the conditions that are believed to be necessary and desirable toward that end.

In this descriptive study, a comparison of eight educational quality indicators was made across institutions of different sizes in the Salvadoran higher-education system. Underlying this study is the assumption that quality is a multidimensional construct. Educational quality is being considered as a complex concept that cannot be expressed by a single indicator.

In this study, small universities are stronger in two important educational indicators, namely student to faculty ratio and full-time students to full-time faculty ratio. Also, these small institutions have a lower computer to student ratio as well as more computers that are connected to the Internet available to their students. The challenge for these institutions would seem to be to address issues related to faculty, namely to increase the percentage of full-time faculty, to increase the retention rates of faculty in the institution, and to increase the number of faculty with graduate education. However, these measures must be taken in light of their institutional mission. For example, a teaching institution would probably need fewer faculty members with graduate studies oriented

toward research. Finally, these smaller institutions should consider focusing their resources on library acquisitions to facilitate the process of teaching and learning.

Large universities, on the other hand, have more books available to students. Also, these institutions have more full-time faculty, more faculty with five or more years of teaching experience, and more faculty with graduate degrees. The challenge for these large universities might then be to lower the student to faculty ratio and full-time students to full-time faculty ratio. For these large universities, it might well be prudent to determine an optimal institutional size to assure higher levels of quality and then to gear student admissions toward that size. In addition, these large institutions should consider investing more of their resources in information technology to support educational programs and services. Computers are no longer a luxury for educational institutions, especially in this information age.

Medium-size universities are in the middle of the spectrum as measured by the quality indicators. These institutions seem to have a good balance on all eight educational quality indicators. This group of institutions should probably continue to maintain a stable number of students while developing measures to continuously improve educational quality.

This study also explored relationships among the eight educational quality indicators developed by the Ministry of Education. Significant correlations were found between different educational quality indicators. For example, an interesting correlation was found between full-time faculty and having five or more years of working experience at an institution. Further research could address the implications that this and other correlations might have for educational administration practice.

Factor analysis, a multivariate technique, facilitated the identification of underlying factors within the set of educational quality indicators. Three clusters of indicators were linked to educational quality. As mentioned earlier, these clusters were labeled "time," "interaction," and "faculty." Overall, the first factor, "time," is present to a similar degree for institutions of all sizes; the second factor, "interaction," is more present in small institutions than in large institutions; and conversely, the third factor, "faculty," is more present in large institutions than in small institutions.

The Government of El Salvador, through the Ministry of Education, has made progress toward ensuring educational quality. It has done so first by establishing the Law for Higher Education and then by collecting university-specific data on the eight educational quality indicators. However, in our opinion, the Ministry now needs to develop educational support services and resources to support the goals of the Law. These services and resources should be focused on the specific needs of each university as highlighted by their performance on the educational indicators. At the same time, the Ministry of Education should reflect whether the same yardstick (the eight educational indicators) should be used to measure excellence for all types of institutions, even if they have different institutional sizes and educational missions.

There are several limitations in this study. First, the validity and reliability of the instrument utilized for the collection of data are largely unknown to the researchers. In a nutshell, this study is based on secondary analysis of survey data. In this regard, however, the reader should be reminded that the data collected by the Ministry and reported herein were compiled as a part of phase one for national accreditation, the self-study phase. In other words, the second phase, a visiting team to each of the universities, as well as the

third phase, the team's report and remediation, serve to validate the data in question. Universities would be reluctant to submit other than reliable and valid data, knowing that its veracity were to be confirmed by a visiting accreditation team. Second, the relatively high standard deviations on all eight educational indicators suggest that considerable caution be taken in generalizing the results beyond the sample. In fact, as a complement to survey analysis of the data on the eight educational quality indicators, a university-by-university evaluation might well reveal interesting contradictory findings. We suggest just such a complementary case-study approach.

Educational quality is a concept difficult to define and measure. It is a context-related concept. An institution may be judged to be of high quality if it meets certain idealistic standards, but standards may well vary according to the individual and the situation. Quality in general and specifically, educational quality, could just as well be assessed using a qualitative approach as a quantitative approach. As we suggested, the most valid assessment of El Salvador's system of higher education might well stem from a comprehensive study combining both the qualitative and quantitative paradigms. Such a study could well provide a deeper analysis of just how the universities interpret the concept of quality and just how they view the Ministry's indicators of educational quality.

Finally, since only El Salvador's universities participated in this study, no type of generalization can be made regarding the rest of Central America's higher educational systems. For this reason, further research is needed to address the issue of educational quality for the region as a whole.

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